

CLAIMS

The invention is claimed as follows:

1. A cathode comprising:

a cathode mixture layer including a cathode active material and a binder, the binder including a synthetic rubber latex adhesive and a thickener wherein the content of the synthetic rubber latex adhesive in the cathode mixture layer ranges from about 2 wt% to about 4 wt%, and the content of the thickener in the cathode mixture layer ranges from about 0.5 wt% to about 2.5 wt%.

2. The cathode according to claim 1, wherein the cathode active material includes a lithium phosphorous oxide that has an olivine structure.

3. The cathode according to claim 1, wherein the cathode mixture layer includes a carbon material as a conductive agent and wherein the content of the carbon material ranges from about 5 wt% to about 12 wt% with respect to the total amount of the cathode active material and the carbon material.

4. A cathode comprising:

a cathode mixture layer including a cathode active material and a binder, the binder including maleic acid-denaturalized polyvinylidene fluoride wherein the content of the maleic acid-denaturalized polyvinylidene fluoride in the cathode mixture layer ranges from about 0.5 wt% to about 4 wt%.

5. The cathode according to claim 4, wherein the amount of the maleic acid-denaturalized polyvinylidene fluoride ranges from about 0.1 wt% to about 0.4 wt%.

6. The cathode according to claim 4, wherein a part of the maleic acid-denaturalized polyvinylidene fluoride is substituted with hexafluoro propylene having a substitution ratio that is about 5 wt% or less.

7. The cathode according to claim 4, wherein the cathode active material includes a lithium phosphorous oxide that has an olivine structure.

8. The cathode according to claim 4, wherein the cathode mixture layer contains a conductive agent, and wherein the content of the carbon material ranges from about 5 wt% to about 12 wt% with respect to the total amount of the cathode active material and the carbon material.

9. A battery comprising:

a cathode, the cathode including a cathode mixture layer containing a cathode active material, and a binder including a synthetic rubber latex adhesive and a thickener;
an anode; and
an electrolyte,

wherein the content of the synthetic rubber latex adhesive in the cathode mixture layer ranges from about 2 wt% to about 4 wt%, wherein the content of the thickener in the cathode mixture layer ranges from about 0.5 wt% to about 2.5 wt%, and wherein the battery has a charge final voltage of about 4.0 V or less.

10. The battery according to claim 9, wherein the cathode active material includes lithium phosphorous oxide that has an olivine structure.

11. The battery according to claim 9, wherein the cathode mixture layer contains a conductive agent including a carbon material, and wherein the content of the carbon material ranges from about 5 wt% to about 12 wt% with respect to the total amount of the cathode active material and the carbon material.

12. A battery comprising:

a cathode, the cathode including a cathode active material and a binder including a maleic acid-denaturalized polyvinylidene fluoride;
an anode; and
an electrolyte,
wherein the content of the maleic acid-denaturalized polyvinylidene fluoride in

the cathode mixture layer ranges from about 0.5 wt% to about 4 wt%, and wherein the battery has a charge final voltage that is about 4.0 V or less.

13. The battery according to claim 12, wherein the amount of the maleic acid-denaturalized polyvinylidene fluoride ranges from about 0.1 wt% to about 0.4 wt%.

14. The battery according to claim 12, wherein a part of the maleic acid-denaturalized polyvinylidene fluoride is substituted with hexafluoro propylene having a substitution ratio that is about 5 wt% or less.

15. The battery according to claim 12, wherein the cathode active material includes lithium phosphorous oxide that has an olivine structure.

16. The battery according to claim 12, wherein the cathode mixture layer contains a conductive agent including a carbon material, and wherein the content of the carbon material ranges from about 5 wt% to about 12 wt% with respect to the total amount of the cathode active material and the carbon material.